1. FURSENKO, A.V.

2. USSR (600)

4. Geology, Stratigraphic - Pripet Valley

7. Upper Devonian deposits of the Pripet region of Poles'ye, Dokl.AN SSSR 90 no. 2, 1953.
Inst. of Geol. Sci.,AS USSR

Establishes paleontologically the characteristic upper Devonian of the Russian type in the region of the northwestern end of the Dnepr-Donets depression. This permits one to introduce the essential corrections to the representations of the paleogeography of the upper Devonian epoch in the western regions of the Russian platform and in the region of the Pripyat Forest Area. Presented by Acad D.V. Nalivkin 16 Mar 53.

260T35

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

FURSENKO, A.V.

Criteria of systematics of foraminifera. Biul.MOIP. Otd.geol. 29 no.5:93-95 S-O '54. (MLRA 8:1)
(Foraminifera)

FURSENKO, A.V., KOVKHUTO, M.G.

Fauna of Frasnian and Famennian deposits in the Polesye area of the Pripet Marshes. Paleont. i stratigr.BSSR no.1:60-107 '55. (MIRA 10:1)

(Polesye--Paleontology, Stratirgraphic)

FURSENKO, N.A.

LUKASHOU, K.I.; AUKSENTS'EU, A.N.; FURSENKA, A.V.; MAKHNACH, A.S.

Geological investigations on the White Russian territory during 40 years (1917-1957). Vestsi AN BSSR Ser. fiz.-tekh. nav. no.3:73-87 '57. (MIRA 11:1)
(White Russia--Geological research)

FURSENKO, A. V.

Stratigraphy of Devonian deposits in the Pripet depression. Trudy Len. ob-va est. 69 no.2:5-24 '57. (MIRA 11:2)
(Pripet Valley--Geology, Stratigraphic) (Rocks, Sedimantary)

3(5) PHASE I BOOK EXPLOITATION SOV/2077

Akademiya nauk Belorusskoy SSR, Minsk. Institut geologicheskikh nauk

Trudy, Vyp. 1 (Transactions of the Institute of Geological Sciences of the Belorussian SSR Academy of Sciences) Nr 1. Minsk, 1958. 227 p. 700 copies printed. Errata slip inserted.

Editorial Board: A.N. Avksent'yev, A.V. Fursenko, and V.N. Shcherbina; Ed. of Publishing House: Ye. G. Barabanova; Tech. Ed.: I. Volokhanovich.

PURPOSE: This issue of the Institute's Transactions is intended for geologists interested in both the physical and historical geology of Belorussia.

COVERAGE: This collection of articles on the geology of Belorussia has been prepared by members of that republic's Geological Institute. Individual papers discuss the prospects of future development of Belorussia's geological and geophysical studies, problems in the petrography of sedimentary rocks, and questions in paleontology and hydrogeology. Among the papers on historical geology are a study of the development of Foraminifera and one on spore-pollen analysis of Lower Carboniferous horizons. References accompany each article.

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Transactions of the Institute (Cont.) SOV/2077

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SOV/2077

Transactions of the Institute (Cont.)

Card 3/5

Trans

AUTHOR: Fursenko, A.V. and Fursenko, K.B. SOV/5-58-4-19/43

TITLE: The Stratigraphical and Paleographical Importance of Findings of Foraminifera of the Upper Eocene Epoch in the BSSR (O stratigraficheskom i paleogeograficheskom znachenii nakhodok foraminifer v verkhnem eotsene BSSR)

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody, Otdel geologicheskiy, 1958, Nr 4, pp 145-146 (USSR)

ABSTRACT: This is a summary of a report given by the author at a conference of the Moscow Society of Naturalists on 22 April 1958. In the past few years, foraminifera of the Upper Eocene epoch have been discovered in the BSSR. V.S. Akimets made the first discovery in the Indura region. The authors of this article found Upper Eocene foraminifera in the Gomel'skaya and Grodnenskaya Oblasts. Over 50 different types were defined, of which the most important are listed in this article.

1. Geology 2. Foraminifera--Classification 3. Paleoecology

Card 1/1

FURSENKO, A.V.

Representatives of the genus Palmula Lea in Cretaceous deposits of the Caspian Depression and the systematic position of this genus. Trudy VNIGRI no.115:107-115 '58. (MIRA 11:10)
(Caspian Depression--Foraminifera, Fossil)

ORLOV, Yu.A., glavnyy red.; RAUZER-CHERNOUSOVA, D.M., otv.red.toma; FURSENKO, A.V., otv.red.toma; MARKOVSKIY, B.P., zam.glavnogo red.; RUZHENTSEV, V.Ye., zam.glavnogo red.; SOKOLOV, B.S., zam.glavnogo red.; VAKHRAMEYEV, V.A., red.; GEKKER, R.F., red.; GROMOVA, V.I., red.; DAVITASHVILI, L.Sh., red.; KRYMGOL'TS, G.Ya., red.; LUPPOV, N.P., red.; OBRUCHEV, D.V., red.; OVECHKIN, N.K., red.; POKROVSKAYA, I.M., red.; PCHELINTSEV, V.F., red.; RADCHENKO, G.P., red.; RODENDORF, B.B., red.; ROZHDESTVENSKIY, A.K., red.; SARYCHEVA, T.G., red.; SUBBOTINA, N.N., red.; TAKHMADZHAN, A.L., red.; FLEROV, K.K., red.; KHABAKOV, A.V., red.; CHERNYSHEVA, N.Ye., red.; EBERZIN, A.G., red.; KOTLYAREVSKAYA, P.S., red.izd-va; MOSKVICHEVA, N.I., tekhn. red.; POLENOVA, T.P., tekhn.red.

[Fundamentals of paleontology; reference book in fifteen volumes for paleontologists and geologists of the U.S.S.R.] Osnovy paleontologii; spravochnik dlia paleontologov i geologov SSSR v piatnadtsati tomakh. Moskva, Izd-vo Akad.nauk SSSR. Vol.1. [General part. Protozoa] Obshchaia chast'. Prosteishie. Otv.red. D.M.Rauzer-Chernousova, A.V.Fursenko. 1959. 481 p. (MIRA 12:7)
(Protozoa, Fossil)

FURSENKO, A.V.

ORLOV, Yu.A., glavnyy red.; MARKOVSKIY, B.P., zam.glavnogo red.; RUZHENTSEV, V.Ye., zamestitel' glavnogo red.; SOKOLOV, B.S., zamestitel' glavnogo red.; EBERZIN, A.G., otv.red.toma; KIPARISOVA, L.D., red.; SHIMANSKIY, V.N., red.; VAKHRAMEYEV, V.A., red.; GEKKER, R.F., red.; GROMOVA, V.I., red.; DAVITASHVILI, L.Sh., red.; KRYMGOL'TS, G.Ya., red.; LUPPOV, N.P., red.; OBRUCHEV, D.V., red.; OVECHKIN, N.K., red.; POKROVSKAYA, I.M., red.; PCHELINTSEV, V.F., red.; RADCHENKO, G.P., red.; RAUZER-CHERNOUSOVA, D.M., red.; RODENDORF, B.B., red.; ROZHDESTVENSKIY, A.K., red.; FLEROV, K.K., red.; FURSENKO, A.V., red.; KHABAKOV, A.V., red.; CHERNYSHEVA, N.Ye., red.; KORDE, K.B., red.izd-va; POLENOVA, T.P., tekhn.red.

[Fundamentals of paleontology; reference book in 15 volumes for paleontologists and geologists of the U.S.S.R.] Osnovy paleontologii; spravochnik dlia paleontologov i geologov SSSR v piatnadtsati tomakh. Moskva, Izd-vo Akad.nauk SSSR. Vol.3. [Mollusks: Loricata, Bivalvia, Scaphopoda] Molliuski - panteirnye, dvustvorchatye, lopatonogie. Otvet.red. A.G.Eberzin, 1960. 299 p.
(Mollusks, Fossil) (MIRA 14:1)

OBLOV, Yu.A., glavnyy red.; MARKOVSKIY, B.P., zam.glavnogo red.; RUZHENTSEV, V.Ye., zam.glavnogo red.; SOKOLOV, B.S., zam.glavnogo red.; SARYCHEVA, T.G., otv.red.toma; VAKHRAMEYEV, V.A., red.; GEKKER, R.F., red.; GROMOVA, V.I., red.; DAVITASHVILI, L.Sh., red.; KRYMGOL'TS, G.Ya., red.; LUPPOV, N.P., red.; OBRUCHEV, D.V., red.; OVECHKIN, N.K., red.; POKROVSKAYA, I.M., red.; PCHELINTSEV, V.F., red.; RADCHENKO, G.P., red.; RAUZER-CHERNOUSOVA, D.M., red.; RODENDORF, B.B., red.; ROZHDESTVENSKIY, A.K., red.; SUBBOTINA, N.N., red.; TAKHTADZHAN, A.L., red.; FLEROV, K.K., red.; FURSENKO, A.V., red.; KHABAKOV, A.V., red.; CHERNYSHEVA, N.Ye., red.; EBERZIN, A.G.; NEVESSKAYA, L.A., red.izd-va; POLENOVA, T.P., tekhn.red.

[Fundamentals of paleontology; manual in fifteen volumes for paleontologists and geologists of the U.S.S.R.] Osnovy paleontologii; spravochnik dlia paleontologov i geologov SSSR v piatnadtsati tomakh. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po geol. i okhrane nedr. Vol.7. [Polyzoa, Brachiopoda. Supplement: Phoronidea] Mshanki, brakhiopody. Prilozhenie: Foronidy. Otvet.red.T.G. Sarycheva. 1960. 342 p. plates. (MIRA 14:4)
(Polyzoa, Fossil) (Brachiopoda, Fossil)
(Phoronidea, Fossil)

FURSENKO, A.V.

S.I.Mironov; obituary. Vop.mikropaleont. no.3:3-4 '60.
(MIRA 13:9)

(Mironov, Stepan Il'ich, 1883-1959)

FURSENKO, A.V.; FURSENKO, K.B.

Upper Eocene Foraminifera in White Russia and their stratigraphic significance. Paleont.i stratigr.BSSR no.3:246-347 '61.
(MIRA 15:2)

(White Russia--Foraminifera, Fossil)

ALEKSEYEVA, R.Yo.; BETEKHTINA, O.A.; VOZZHENNIKOVA, T.F.; GRATSIANOVA, R.T.; DUBATOLOV, V.N.; YELKIN, Ye.A.; ZAKHAROV, V.A.; IVANOVSKIY, A.B.; SIDYACHENKO, A.I.; KUL'KOV, N.P.; MYAGKOVA, Ye.I.; OBUT, A.M.; SAKS, V.N.; TESAKOV, Yu.I.; FURSENKO, A.V.; KHOMENTOVSKIY, V.V.; YUFEREV, O.V.

Corresponding Member of the Academy of Sciences of the U.S.S.R. Boris Sergeevich Sokolov; 1914 - ; on his 50th birthday. Geol. i geofiz. no.8:140-147 '64 (MIRA 18:2)

FURSENKO, A.V.; GILEVICH, R.V.

Transgressive variability of Foraminifera from the group Lenticulina kasanzevi. Izv.vys.ucheb.zav.; geol. i razv. 8 no.1:45-54 Ja '65. (MIRA 18:3)

1. Institut geologicheskikh nauk AN BSSR.

KORULIN, Dmitriy Mikhaylovich; FURSENKO, A.V., retsenzent; ZAVRIYEV, V.G., prof., retsenzent; LITVINSKAYA, T., red.

[Geology and minerals of the U.S.S.R.] Geologiia i poleznye iskopaemye SSSR. Minsk, Vysshaia shkola, 1965. 310 p. (MIRA 18:6)

1. Chlen-korrespondent AN Belorusskoy SSR (for Fursenko).

BOGUSH, Oksana Ivanovna; GERASIMOV, Yevgeniy Konstantinovich; YUFEREV, Oleg Vyacheslavovich. Prinimali uchastiye: DUBATOLOV, V.N.; CHUDINOVA, I.I.; IVANOVSKIY, A.B.; YELKIN, Ye.A.; CHERNYAK, G.Ye.; FURSENKO, A.V., otv. red.

[Lower Carboniferous of the lower Lena Valley] Nizhnii karbon nizov'ev Leny. Moskva, Nauka, 1965. 64 p. (MIRA 18:7)

1. Chlen-korrespondent AN Belorusskoy SSR (for Fursenko).

L 39886-66 EWT(m)/EWP(j)/ETC(m)-6/T IJP(c) RM/WW/GD-2

ACC NR: AP6016658 SOURCE CODE: UR/0079/65/035/010/1882/1882

AUTHOR: Nifant'yev, E. Yo.; Fursenko, I. V.

ORG: none

TITLE: Alcoholysis of beta-fluoroethyl phosphites and phosphonites

SOURCE: Zhurnal obshchey khimii, v. 35, no. 10, 1965, 1882

TOPIC TAGS: vacuum distillation, phosphorylation, ester, polyvinyl alcohol, organic phosphorus compound, fluorinated compound, alcohol, fluorohydrin, organic synthetic process

ABSTRACT: It has been shown for the first time that various phosphites and phosphonites can be obtained in high yields by the alcoholysis of beta-fluoroethyl esters of acids of trivalent phosphorus at 20-40°C. The method opens up new horizons for the synthesis of labile phosphorus-containing compounds. The beta-fluoroethyl ester of 1,3-butylenephosphorous acid and an equimolar amount of octanol were maintained for 10 hours at 20°C. Ethylene fluorohydrin was then driven off (95%) under vacuum, and the mixture was distilled. Octyl-1,3-butylene phosphite was obtained in 80% yield. Dioctylphenyl phosphonite (62% yield) and propylene-1,3-bis-1,3-butylene phosphite (83% yield) were obtained in similar fashion. The fluoroethyl esters can be used for the phosphorylation of high-molecular compounds, e.g., polyvinyl alcohol. [JPRS]

SUB CODE: 07 / SUBM DATE: 13May65

Card 1/1 UDC: 547.26'118

NIFANT'YEV, E.Ye., PURSENKO, L.V.

Alcoholysis of β-fluoroethyl phosphites and phosphonites.
Zhur. ob. khim. 35 no.10:1882 O '65. (MIRA 18:10)

AUTHOR: Fursenko, A.V. and Fursenko, K.B. SOV/5-58-4-19/43

TITLE: The Stratigraphical and Paleographical Importance of Findings of Foraminifera of the Upper Eocene Epoch in the BSSR (O stratigraficheskom i paleogeograficheskom znachenii nakhodok foraminifer v verkhnem eotsene BSSR)

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody, Otdel geologicheskiy, 1958, Nr 4, pp 145-146 (USSR)

ABSTRACT: This is a summary of a report given by the author at a conference of the Moscow Society of Naturalists on 22 April 1958. In the past few years, foraminifera of the Upper Eocene epoch have been discovered in the BSSR. V.S. Akimets made the first discovery in the Indura region. The authors of this article found Upper Eocene foraminifera in the Gomel'skaya and Grodnenskaya Oblasts. Over 50 different types were defined, of which the most important are listed in this article.

1. Geology 2. Foraminifera--Classification 3. Paleoecology

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APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910019-2"

FURSENKO, A.V.; FURSENKO, K.B.

Upper Eocene Foraminifera in White Russia and their stratigraphic significance. Paleont.i stratigr.BSSR no.3:246-347 '61.
(MIRA 15:2)

(White Russia--Foraminifera, Fossil)

FURSENKO, M.

FURSENKO, M.

Orbit of planet 1952 SP_1. Astron.tsir. no.151:1 Jl '54.
(MLRA 8:3)

1. Institut teoreticheskoy astronomii AN SSSR.
(Planets, Minor)

PHASE I BOOK EXPLOITATION SOV/5461

Akademiya nauk SSSR. Institut teoreticheskoy astronomii.

Astronomicheskiy yezhegodnik SSSR na 1962 g. (Astronomical Yearbook of the USSR for 1962) Moscow, Izd-vo Akademii nauk SSSR, 1960. 647 p. Errata slip inserted. 2,000 copies printed.

Sponsoring Agency: Institut teoreticheskoy astronomii Akademii nauk SSSR.

Resp. Ed.: M. F. Subbotin, Director of the Institute of Theoretical Astronomy of the Academy of Sciences USSR, Corresponding Member, Academy of Sciences USSR.

PURPOSE: This book is intended for astronomers and geophysicists.

COVERAGE: The Astronomical Yearbook of the USSR for 1962 has been compiled in accordance with changes proposed by the International Astronomical Union to member organizations at its meeting in 1958. In addition to usual

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information on the Sun, Moon, Earth, and planets, the Yearbook contains the ephemerides of the lunar crater Moesting A, which until 1960 were published by the Berliner Astronomisches Jahrbuch, [Berlin Astronomical Yearbook], and whose regular publication has now been undertaken by the Institute of Theoretical Astronomy of the USSR at the request of the Union's Committee on Ephemerides. The solar, lunar, and planetary coordinates in the Yearbook are based on data supplied by the British Nautical Almanac as stipulated by the Astronomical Union. The material in the Yearbook was compiled and prepared by the following scientists: computation of ephemerides of the lunar crater Moesting A on high-speed computer BEMS at the Vychisli-tel'nyy tsentr AN SSSR (Computer Center AS USSR) - D. K. Kulikov; reduction of solar and lunar ephemerides - A. G. Mal'kova and G. A. Mazing; computation of nutation on high-speed computer BEMS - D. V. Zagrebin, O. M. Gromova and A. Ya. Faletova; computation of reduction values of visible positions of ten-day and near-polar stars - M. B. Zheleznyak and M. A. Fursenko; preparation of original data on visible positions of ten-day and near-polar stars -

E. A. Mitrofanova (in charge), O. M. Gromova, G. A. Mazing, T. I. Mashinskaya, G. M. Poznyak, K. G. Shumikhina, and P. A. Gutkina; heliocentric coordinates of the large planets - O. M. Gromova, A. G. Mal'kova; reduction values (trigonometric system) - E. A. Mitrofanova, and K. G. Shumikhina; mean positions of stars - E. A. Mitrofanova, M. B. Zheleznyak, O. M. Gromova, K. G. Shumikhina, M. A. Fursenko; solar and lunar eclipses - E. A. Mitrofanova, M. A. Fursenko; planetary configurations - E. A. Mitrofanova, O. M. Gromova; ephemerides for physical solar observations - P. A. Gutkina, T. I. Mashinskaya; ephemerides for physical lunar observations - G. A. Mazing, P. A. Gutkina, K. G. Shumikhina; ephemerides of the illumination of the discs of Mercury and Venus - T. I. Mashinskaya, G. M. Poznyak; ephemerides for physical observations of Mars - G. M. Mazing, T. I. Mashinskaya; ephemerides for physical observations of Jupiter - T. I. Mashinskaya, E. A. Mitrofanova; Saturn's rings - G. A. Mazing, T. I. Mashinskaya; sunrise and sunset - A. I. Frolova; rising and setting of the moon - P. A. Gutkina and K. G. Shumikhina; altitudes and azimuths of the Polar Star - A. G. Mal'kova

and K. G. Shumikhina; table for determining latitude by the altitude of the Polar Star - K. G. Shumikhina and P. A. Gutkina; preparation of manuscript for publication - V. G. Kudinova; review and edition of "Explanatory Notes", D. K. Kulikov. There are no references.

TABLE OF CONTENTS:

ACC NR: AR6019468 SOURCE CODE: UR/0269/66/000/002/0009/0009

AUTHOR: Fursenko, M. A.

TITLE: Methods of calculating the ephemeris of the Moon

SOURCE: Ref. zh. Astronomiya, Abs. 2.51.82

REF SOURCE: Byul. In-ta teor. astron. AN SSSR, v. 10, no. 4, 1965, 272-315

TOPIC TAGS: lunar motion, Jupiter planet, Saturn planet

ABSTRACT: Lunar coordinates were calculated using Brown's expansions which were presented in the end-form after modifications. The necessity for the modifications was pointed out by W. J. Eckert, R. Jones, H. K. Clark in 1954 (see RZh Astr., 1964, 2.51.106). The expansions were also modified so that they could be used in electronic computers more readily than Brown's expansions. Equations were derived for the calculation of approximate lunar coordinates, longitude and latitude, with an accuracy of 0'.1, and the parallax with an accuracy of 0'.01. The accuracy of the lunar coordinates was estimated for a time interval of 50 years. The equations lend themselves to programming in the BESM2 electronic computer. A method for the numerical integration of equations of lunar motion is given. It takes into account the influence of Jupiter and Saturn, whose coordinates need not be so accurate. Polynomials for the rectangular and spherical coordinates of Jupiter and Saturn for a 10-year period are also given.

Card 1/2 UDC: 521.3:523.3

ACC NR: AR6019468

Bibliography of 13 titles. N. Yakhontova. [Translation of abstract]

SUB CODE: 03

Card 2/2

FURSENKO, M.A.

Methods for calculating the lunar ephemeris. Biul. Inst. teor. astron. 10 no.4:272-315 '65. (MIRA 18:9)

ACC NR: AR6019468 SOURCE CODE: UR/0269/66/000/002/0009/0009

AUTHOR: Fursenko, M. A.

TITLE: Methods of calculating the ephemeris of the Moon

SOURCE: Ref. zh. Astronomiya, Abs. 2.51.82

REF SOURCE: Byul. In-ta teor. astron. AN SSSR, v. 10, no. 4, 1965, 272-315

TOPIC TAGS: lunar motion, Jupiter planet, Saturn planet

ABSTRACT: Lunar coordinates were calculated using Brown's expansions which were presented in the end-form after modifications. The necessity for the modifications was pointed out by W. J. Eckert, R. Jones, H. K. Clark in 1954 (see RZh Astr., 1964, 2.51.106). The expansions were also modified so that they could be used in electronic computers more readily than Brown's expansions. Equations were derived for the calculation of approximate lunar coordinates, longitude and latitude, with an accuracy of 0'.1, and the parallax with an accuracy of 0'.01. The accuracy of the lunar coordinates was estimated for a time interval of 50 years. The equations lend themselves to programming in the BESM2 electronic computer. A method for the numerical integration of equations of lunar motion is given. It takes into account the influence of Jupiter and Saturn, whose coordinates need not be so accurate. Polynomials for the rectangular and spherical coordinates of Jupiter and Saturn for a 10-year period are also given.

Card 1/2 UDC: 521.3:523.3

ACC NR: AR6019468

Bibliography of 13 titles. N. Yakhontova. [Translation of abstract]

SUB CODE: 03

Card 2/2

TSYGANOV, V.A.; GOLYAKOV, P.N.; MALYSHKINA, M.A.; FURSENKO, M.V.; FILIPPOVA, A.I.

Characteristics of antibiotics produced by Actinomyces levoris. Antibiotiki 8 no.1:29-33 Ja'63. (MIRA 16:6)

1. Leningradskiy institut antibiotikov.
(ACTINOMYCES) (ANTIBIOTICS)

ROMANKOVA, A.G.; FURSENKO, M.V.; KOMMUNARSKAYA, A.D.

Variability of Penicillium nigricans Bain., the producer of griseofulvin, under the action of ultraviolet and x-rays and ethylenimine. Mikrobiologiia 33 no.4:582-586 Jl-Ag '64. (MIRA 18:3)

1. Leningradskiy nauchno-issledovatel'skiy institut antibiotikov.

TSYGANOV, V.A.; KONEV, Yu.Ye.; FURSENKO, M.V.; IOFINA, E.I.; AL'BERT, M.M.; MUSTAFOVA, N.N.; VENKOVA, I.B.; SOLOV'YEV, S.N.; MALYSHKINA, M.A.; BOGDANOVA, N.P.; KOTENKO, T.V.; FILIPPOVA, A.I.

Isolation and characteristics of actinomycetes producing the antibiotic trichomycin. Antibiotiki 9 no.4:291-296 Ap '64. (MIRA 19:1)

1. Leningradskiy nauchno-issledovatel'skiy institut antibiotikov.

KUNEV, St.; SHEINKMAN, M.; MURSENKO, V.

A method for the noncontact studies of the conductivity phenomena in the cadmium sulfide semiconductors. Izv fiz atom BAN 10 no.2:29-36 '62.

KATSMAN, Yu.; VLADIMIROV, O.; FURSENKO, V.

Pneumatic conveying of sawdust to the frying and smoking chambers. (MIRA 17:4)
Mias.ind.SSSR 35 no.1:38-40 '64.

1. Moskovskiy ordena Lenina myasokombinat.

SOV/78-3-10-3/35

AUTHORS: Mizetskaya, I. B., Trofimenko, A. P., Fursenko, V. D.

TITLE: A Method of Production of Monocrystals of CdS, CdSe, and Mixed Monocrystals of CdS+CdSe (Metodika polucheniya monokristallov CdS, CdSe i smeshannykh monokristallov CdS+CdSe)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 10, pp 2236-2239 (USSR)

ABSTRACT: The method was described by which monocrystals of CdS and CdSe and mixed monocrystals of CdS+CdSe are produced. Metallic cadmium, sulfur and selenium were used as initial materials. The principle of the method is that vaporous cadmium, selenium and sulfur in argon atmosphere, which acts as a supporting gas, is introduced into the field of reaction at a temperature of 1000°C, where sulfides and selenides of cadmium are formed. It was found that optimal conditions are given for CdS-synthesis when the field of reaction has a temperature of 1060-1070°C. The temperature for monocrystals of cadmium sulfide in the zone of evaporation is 650°C, and 300-350°C for the evaporation of sulfur. Optimal conditions are given for the production of CdS+CdSe when a temperature of 1050-1070°C has been reached. A scheme of the apparatus

A Method of Production of Monocrystals of CdS, CdSe, and Mixed Monocrystals of CdS+CdSe

is given in figure 1 which is used in the production of monocrystals of CdS and CdSe, as well as of monocrystals of CdS+CdSe. It was found that the grain size of monocrystals depends on the flow velocity of argon during the crystallization process. The best results were obtained when argon had a velocity of 80 cm^3 per minute. With regard to the optimal conditions, the monocrystals of CdS and CdSe, as well as those of CdS+CdSe, are photo-sensitive. The monocrystals of CdS are lemon-colored, and those of CdSe black. The mixed monocrystals of CdS+CdSe vary in color from pink to red. That variation in color depends on the ratio CdS : CdSe. The mixed crystal becomes more and more dark when the quantity of CdSe is increased more and more. The grain size varies between 10-20 mm.
There are 4 figures and 2 references, 0 of which is Soviet.

ASSCCIATION: Institut fiziki Akademii nauk USSR (Physics Institute of the Academy of Sciences,UkrSSR)

SUBMITTED: July 22, 1957

Fursenko, V.D.

PHASE I BOOK EXPLOITATION SOV/4966

Soveshchaniye po poluprovodnikovym materialam. Moscow, 1957

Voprosy metallurgii i fiziki poluprovodnikov; trudy 3-go soveshchaniya. (Problems in the Metallurgy and Physics of Semiconductors; Transactions of the Third Conference) Moscow, Izd-vo AN SSSR, 1959. 129 p. Errata slip inserted. 3,200 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova. Resp. Ed.: N. Kh. Abrikosov, Doctor of Chemical Sciences; Ed. of Publishing House: P. F. Zolotov.

PURPOSE: This collection is intended for technical and scientific personnel concerned with the investigation and production of semiconductor materials. It may also be used by students in schools of metallurgy.

COVERAGE: The collection contains reports submitted at the Third Conference on Semiconductor Materials, held at the Institute of Metallurgy imeni A. A. Baykov, AS USSR, Moscow, in May 1957. The reports deal with problems of obtaining and investigating germanium, silicon, and semiconductor compounds. The collection was first edited by D. A. Petrov, Doctor of Technical Sciences. References accompany most of the reports.

Card 5/5

JP/dfk/os
3/30/61

9.4177 (1138)
26.2421 also 3110

27279 S/181/61/003/008/009/034
B102/B202

AUTHORS: Marchenko, A. I., Sal'kov, Ye. A., Fedorus, G. A., and Fursenko, V. D.

TITLE: Some properties of CdS single crystals with gold impurities

PERIODICAL: Fizika tverdogo tela, v. 3, no. 8, 1961, 2285 - 2292

TEXT: The authors present results of studies of the effect of gold impurities in CdS single crystals on the photosensitivity, the spectral distribution of the photocurrent, the thermostimulated current and other properties of these crystals. The authors used single crystals with low sensitivity to light and either high dark resistivity (insulators, $\varrho \geq 10^{10}$ ohm·cm) or low dark resistivity (conductors, $\varrho = 10^{5}$ ohm·cm). The gold impurity was diffused-in since both gold impurities and annealing process affected the crystal properties. Preliminary studies showed that in order to be able to study the impurity effect separately, the specimens must be heat-treated (550°C, 2.5 hr) before diffusing in the impurities. The spectral photocurrent distribution was recorded by a УМ-2 (UM-2) monochromator the maximum intensity of the monochromatic

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Some properties of...

light source (λ = 510 mμ) was $5 \cdot 10^{13}$ quanta/sec·cm^2. After the initial attenuation of the photocurrent the relaxation time of the photocurrent was determined by means of an ЭНО-1 (ENO-1) oscilloscope. The following results were obtained when studying the effect of gold impurities on the integral photosensitivity: Dark conductivity increases only slightly with increasing gold content. It attains saturation with high gold content. In this case the photosensitivity is increased by about 100 times as compared to the initial value. A separate study of the effect of annealing and of the gold impurity showed that annealing inconsiderably increased the dark conductivity of the "insulating" crystals, but strongly reduced that of the "conductive" crystals. If gold was added to the annealed specimen, dark conductivity was slightly increased in both cases. The following results were obtained when studying the effect of gold on the sensitivity to X-ray and gamma radiation:

Crystal	I_{dark}, a	$I_{x\text{-ray}}$, a	I_γ, a
	100 volts		
CdS, pure, annealed	10^{-12}	10^{-9}	10^{-8}
CdS, annealed, +Au	10^{-11}	$2.3 \cdot 10^{-7}$	10^{-6}

Card 2/6

Some properties of...

Co^{60} (300 mcuries) served as gamma source, the X-ray source was an X-ray tube with Cu-anticathode of the device УРС-25И (URS-25I). The photosensitivity at a voltage of 50 v applied to the crystals was 1a/lumen. Table 4 gives further numerical data. The studies of the effect of gold on the spectral distribution of the photocurrent $I_\varphi(\lambda)$ showed that the shape of the curve is maintained (see Fig. 1). The results of the study of the effect of gold on thermostimulated photoconductivity (made by A. P. Trofimenko) are shown in Fig. 2. Finally, the authors studied the effect of infrared quenching of the photocurrent. The alloyed specimens showed two maxima of infrared quenching: at 0.95 and at 1.4 μ. With non-alloyed specimens the first maximum was at 0.9 μ. This shift is due to the existence of two infrared absorption mechanisms. The results of the studies are summarized as follows: 1) The gold impurities increase the sensitivity of the CdS single crystals to light, gamma and X-radiation. 2) The increase of photosensitivity is related to an increase in the lifetime of the photocurrent carriers. 3) In the entire spectral range of photosensitivity of CdS gold has a stimulating effect without changing the shape of the spectral characteristics. 4) In CdS the gold atoms do not form new levels for the electron capture in the energy

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interval 0.005 - 0.5 ev. The increase of the area within the curve of thermostimulated conductivity is due to an increase of the lifetime of the free photoelectrons. 5) Gold impurities do not influence the energetic position of the bands of infrared quenching of the photocurrent. The authors thank Academician AS UkrSSR V. Ye. Lashkarev for interest and M. K. Sheynkman for discussions. There are 4 figures, 4 tables, and 10 references: 5 Soviet-bloc and 5 non-Soviet-bloc.

ASSOCIATION: Institut poluprovodnikov AN USSR, Kiyev (Institute of Semiconductors AS UkrSSR, Kiyev)

SUBMITTED: February 20, 1961

37806

S/120/62/000/002/037/047
E140/E163

24.7700

AUTHORS: Kynev, St., Sheynkman, M.K., Shul'ga, I.B., and Fursenko, V.D.

TITLE: Contactless method of measuring the parameters of certain semiconductors

PERIODICAL: Pribory i tekhnika eksperimenta, no.2, 1962, 154-159

TEXT: Essentially, the method consists in placing the sample of semiconductor between two capacitor plates in a Hartley oscillator circuit and measuring the change of grid current. This can be calibrated in terms of the bulk conductivity of the sample. The oscillator operates at about 10-15 Mcs. The electrodes are shaped so that the sample can be illuminated, for determining its photoelectric properties. Some applications are: acceptance testing of samples for their photoelectric properties, under conditions eliminating the distorting effects of electrodes in contact with the sample; study of just these distorting effects; study of samples in an enclosed volume without requiring their exposure to the atmosphere; study of the kinetics of infra-red extinction of a

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Contactless method of measuring... S/120/62/000/002/037/047
E140/E163

photocurrent; study of local phenomena in inhomogeneous CdS single crystals and thin PbS films. There are 7 figures.

ASSOCIATION: Institut poluprovodnikov AN USSR
(Semiconductor Institute, AS Ukr.SSR)

SUBMITTED: August 8, 1961

4

Card 2/2

35103

S/185/62/007/001/013/01-
D299/D302

9.4177
26.2420

AUTHORS: Fedorus, H.A., and Furseenko, V.D.

TITLE: Effect of copper impurities on photoelectric properties of CdS single crystals

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 1, 1962, 82 - 83

TEXT: The copper was applied to the crystal surface by the diffusion method. The prepared single crystals with the applied copper layer were annealed in a vacuum (at 600°C) for 2 - 2.5 hours. The copper layer was 0.03 μ thick. The electrodes were made of galium. Comparative measurements were taken of the integral photosensitivity, the relaxation time of the photocurrent, and the spectral- and lux-ampere characteristics of clean CdS single-crystals and of the single crystals with the impurity -- CdS (Cu). The relaxation time of the photocurrent was measured by means of oscillograph ЭНО-1 (ENO-1), the spectral characteristics - by monochromator УМ-2 (UM-2). A table shows the mean values (obtained from a lot of 25 specimens) of the relaxation time τ^0 and of the integral photosensitivi-

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ty. It was found that the copper impurity has a considerable effect on τ^0, reducing it by over one order of magnitude. The integral photosensitivity decreases, too. The spectral distribution of the photocurrent and the lux-ampere characteristics are also considerably affected by the copper impurity. The dependence $I_{ph}(L)$ (L denoting the luminance) is linear in the case of CdS(Cu) single-crystals, whereas for clean CdS single-crystals they are not linear. The relaxation time τ^0 of CdS (Cu) single-crystals increases with the intensity of illumination, whereas for clean crystals it decreases with increasing intensity. Conclusions: The copper impurity in the CdS single-crystals has a considerable effect on the recombination of free electrons. It is possible that this mechanism involves the creation of new short-lifetime recombination centers by the copper impurity. There are 2 figures, 1 table and 2 Soviet-bloc references.

ASSOCIATION: Instytut napivprovidnykiv AN URSR (Institute of Semiconductors AS UkrRSR), Kyyiv

SUBMITTED: August 10, 1961

Card 2/2

BUN'KO, Viktor Aleksandrovich; VOLOTKOVSKIY, Sergey Andronovich, doktor tekhn. nauk, prof.; ROL'NIK, Mikhail Abramovich; FURSOV, Viktor Dmitriyevich; FURMANOV, B.M., otv. red.; BELOV, V.S., red. izd-va; OVSEYENKO, V.G., tekhn. red.

[Remote control and communications in mining] Rudnichnaia telemekhanika i sviaz'. [By] V.A.Bun'ko i dr. Moskva, Gosgortekhizdat, 1962. 258 p. (MIRA 16:1)
(Remote control) (Mine communications)

FEDORUS, G.A. [Fedorus, H.A.]; FURSENKO, V.D.

Effect of copper impurities on the photoelectric properties of CdS monocrystals. Ukr.fiz.zhur. 7 no.1:82-83 Ja '62. (MIRA 15:11)

1. Institut poluprovodnikov AN UkrSSR, Kiyev.
(Photoelectricity)
(Cadmium sulfide crystals—Electric properties)
(Copper)

ACC NR: AP6033585 SOURCE CODE: UR/0181/66/008/010/3133/3135

AUTHOR: Malynk, N. F.; Fedorus, G. A.; Fursenko, V. D.; Shakh-Melikova, I. A.; Sheynkman, M.K.

ORG: Institute of Semiconductors AN UkrSSR, Kiev (Institut poluprovodnikov AN UkrSSR)

TITLE: Determination of the energy required to separate an electron-hole pair in CdS single crystals irradiated with electrons of energy 5 - 50 kev

SOURCE: Fizika tverdogo tela, v. 8, no. 10, 1966, 3133-3135

TOPIC TAGS: electron hole, electron energy, stimulated emission, electron bombardment, photoconductivity, electric conductivity, forbidden band

ABSTRACT: In view of the fact that earlier investigations have neglected the question of the energies required to produce or separate electron-holes, and knowledge of these energies is important in connection with the use of electron beams to produce stimulated emission in semiconductors, the authors have determined the electron-hole separation energy ε in single-crystal CdS bombarded with electrons of 5 - 50 kev energy. They were able to measure ε with sufficient accuracy only by using single crystals with a specific nonselective spectral photoconductivity characteristic obtained through special heat treatment. The method of determining ε is based on comparison of the stationary values of the photo- and electron-conductivity in the same crystal. The

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ACC NR: AP6033585

measurements were made in vacuum of 10^{-5} mm Hg at room temperature. The value of $3E_g$ ($E_g = 7.5 \pm 0.8$ ev is obtained in this manner for ϵ, which is found to be equal also to fobidden band width). The same ratio of ϵ to E_g was obtained by others for a number of semiconductors and agrees with the approximate theoretical model proposed by W. Shockley. Orig. art. has: 1 figure and 1 formula.

SUB CODE: 20/ SUBM DATE: 19May66/ ORIG REF: 005/ OTH REF: 008

Card 2/2

BDS
L 10788-63
ACCESSION NR: AP3000240 S/0185/63/008/005/0598/0599

AUTHOR: Arkhy*pova, A. M.; Fedorus, G. A.; Fursenko, V. D. 46

TITLE: Investigation of the phenomenological quantum yield from the photoconductive effect in the CdS single crystal

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 5, 1963, 598-599

TOPIC TAGS: cadmium sulfide crystal, phenomenological quantum yield, cadmium sulfide photoresistor

ABSTRACT: The relation between phenomenological quantum yield (PQY) and the intensity of constant bias lighting in a wide range of specimen illuminations by short light pulses has been experimentally investigated by measuring the photo response. The experiments show that the PQY for specimens with low dark conductivity (10^{-10} mho) increases with bias lighting, rises to a maximum, and then decreases at comparatively high bias lighting. The PQY for a specimen with a 10^{-7} to 10^{-6} mho dark conductivity decreases monotonically with an increase in bias lighting. The PQY for the majority of specimens varied within 0.01 to 0.02 electron/quantum. The authors conclude that the sensitivity threshold of CdS photoresistors can be increased either by adding certain impurities to the

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ACCESSION NR: AP3000240

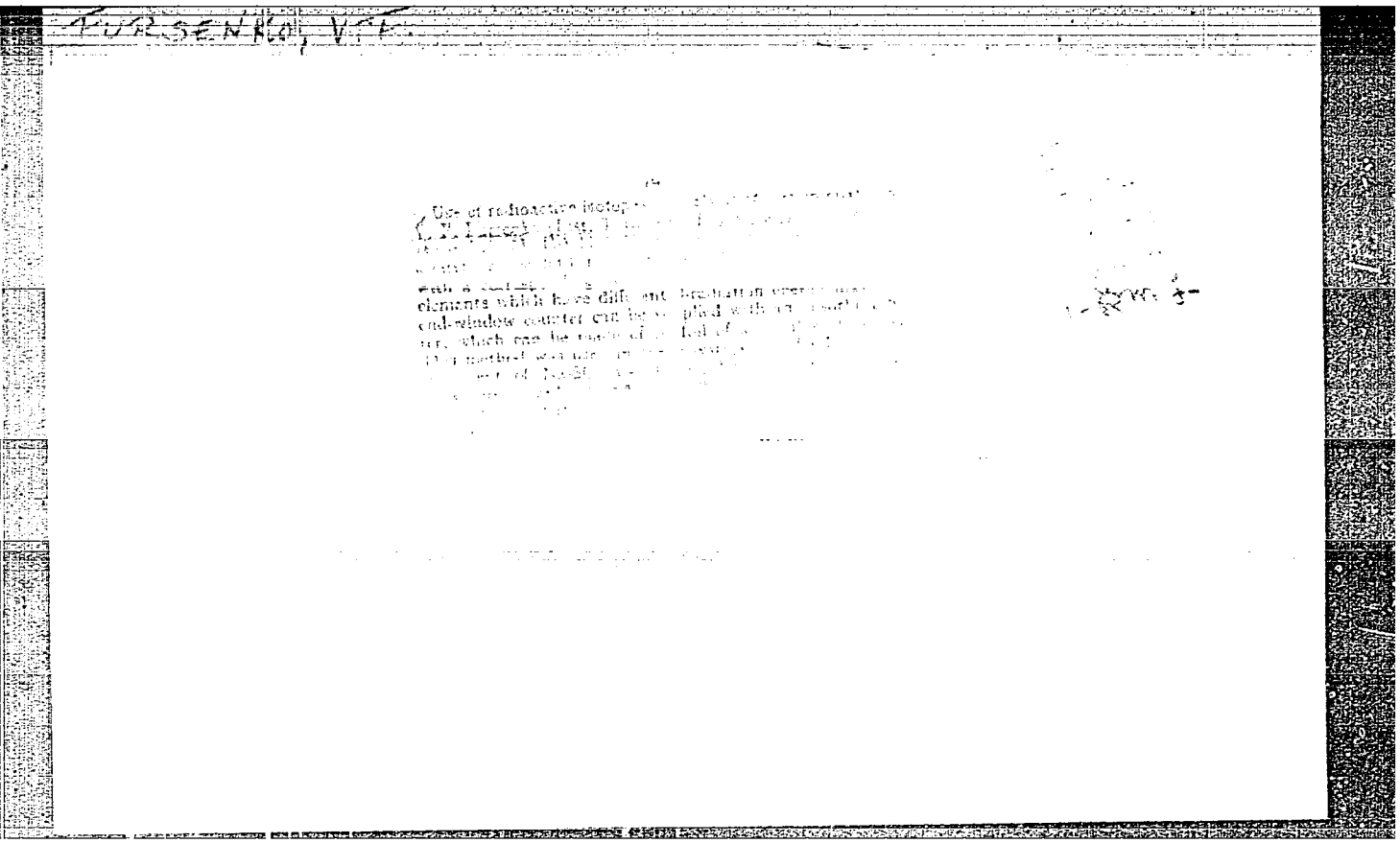
CdS single crystal or by treatment of the photosensitive surface of the crystal. "The authors express their thanks to Academician V. E. Lashar'ov for his valuable suggestions and interest in the work." Orig. art. has: 1 figure and 1 formula.

ASSOCIATION: Insty*tut napivprovidny*kiv AN URSR m. Ky*yiv (Institute of Semiconductors, AN URSR)

SUBMITTED: 01Feb63 DATE ACQ: 18Jun63 ENCL: 00

SUB CODE: PH NO REF SOV: 007 OTHER: 000

Card 2/2



FURSENKO, V.F., inzh.

Investigating methods of determining steam quality. Trudy RIIZHT no.24:5-75 '58. (MIRA 11:9)
(Steam--Testing)

FURSENKO, V. F., Candidate Tech Sci (diss) -- "Investigation of certain methods of determining the quality of steam". Rostov na Donu, 1959. 19 pp (Leningrad Order of Lenin Inst of Railroad Transport Engineers im Acad V. N. Obraztsov), 150 copies (KL, No 24, 1959, 142)

TATARINOV, B.P.; FURSENKO, V.F.

Determining the salt content of vapor by the electric conductivity method. Zav.lab. 26 no.2:179-182 '60. (MIRA 13:5)

1. Rostovskiy institut inzhenerov zheleznodorozhnogo transporta.
(Vapors) (Salt)

TATARINOV, B.P.; FURSENKO, V.F. (Rostov-on-Don)

Electric conductivity of very dilute Na_2HPO_4 and K_2HPO_4 solutions. Zhur.fiz.khim. 34 no.1:135-137 Ja '60.
(MIRA 13:5)
(Sodium phosphate) (Potassium phosphate)

FURSENKOV, V. A.

51-3-13/14

AUTHORS: Neporent, B. S., Vasilevskiy, K. P., Lapina, M. A. and Fursenkov, V. A.

TITLE: A Vacuum Spectrometer with a Diffraction Grating for the 0.7-3 μ Spectral Region. (Vakuumnyy spektrometr s difraktsionnoy reshetkoy dlya oblasti spektra 0.7-3 μ.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.III, Nr.3, pp.289-293. (USSR)

ABSTRACT: This paper described apparatus of high resolving power for obtaining spectra in the region 0.7-3 μ. It consists of a recording vacuum spectrometer with a diffraction grating and a cell which light is made to traverse many times so that its path length in the vessel can be 180 m. This apparatus is suitable for recording of spectra of rarefied or weakly absorbing gases at temperatures from room temperature to 100°C. The optical part of the apparatus is shown in Fig.1. Fig.2 shows the general view of the apparatus with the control panel. The cell used in this apparatus follows in its construction Ref. 14 and 15. The diffraction grating used is of echelette type, 150 x 150 mm, with 300 lines per millimetre. This

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A Vacuum Spectrometer with a Diffraction Grating for the 0.7-3 μ Spectral Region.

grating reflects 75% of the incident light at 2 μ, 55% at 1.5 μ and 60% at 2.3 μ. The monochromater used follows Ref.16. The spectrometer is placed in a vacuum chamber (0.1 mm Hg). The signal falls on a PbS photoresistance and is amplified. For this purpose the incident light is modulated by a perforated disc at 550 c/s frequency. This apparatus makes it possible to resolve spectra down to 0.1 cm^{-1}. Fig.4 shows radiational lines of water vapours near 3900 cm^{-1} obtained using the apparatus described. The slit width was 0.06 cm^{-1} and lines approximately 0.1 cm^{-1} distant from each other are resolved. This means that the resolving power of the instrument reaches 40 000, and this corresponds to 45 000 resolving power of the diffraction grating. Fig.5 shows absorption spectra of water vapours near 2.7 μ obtained using path lengths of 8.8 (broken curve) and 120.8 (continuous curve) metres respectively. When the container used was of quartz, absorption and emission of carbon dioxide could be measured with this apparatus.

51-3-13/14

A Vacuum Spectrometer with a Diffraction Grating for the 0.7-3 μ Spectral Region.

The authors thank F. M. Gerasimov for supplying the diffraction grating used. There are 5 figures, and 17 references, 1 of which is Slavic.

SUBMITTED: 15 January, 1957.

AVAILABLE: Library of Congress

Card 3/3

SOV/51-6-6-16/34

24(7), 3(7)
AUTHORS: Kiseleva, M.S., Neporent, B.S. and Fursenkov, V.A.

TITLE: Spectral Determination of the Humidity of Air in the Upper Layers of the Atmosphere (Spektral'noye opredeleniye vlazhnosti vozdukha v verkhnikh sloyakh atmosfery)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 6, Nr 6, pp 801-803 (USSR)

ABSTRACT: Diffraction-grating spectrometers were used to determine humidity of air at various heights of the atmosphere from attenuation of solar radiation in the regions of absorption by water at 1.4, 1.9 and 2.6 μ. The spectral regions around 1.2, 1.5 and 2.2 μ were used for control purposes. The various wavelengths were presented successively to the spectrometer slit by means of a device which uses a cam. The optical signal was modulated at 100 c/s and photoresistors of PbS were used as receivers (they were supplied by S.P. Tibilov and I.G. Kopilevich). The instrument used is shown schematically in Fig 1 where D is a matt aluminized plate used as the source. The instrument was calibrated by means of a special cell in which the optical path could be varied from 8 to 100 m, pressure of water vapour from 0.9 to 10 mm Hg and pressure of nitrogen which imitated atmosphere, from 50 to 500 mm Hg. A calibration curve for the 1.4 μ region is shown in Fig 2; it gives the

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Spectral Determination of the Humidity of Air in the Upper Layers of the Atmosphere

reduced absorption as a function of the square root of the amount of water. The instrument was made as light as possible and was sent up in a balloon from Central Aerological Laboratories near Khar'kov and Moscow. After reaching its maximum height and drifting for a while, the balloon released the spectrometer and the latter fell to the ground attached to a parachute. From the absorption spectrograms obtained at various heights the amount of water vapour in the atmosphere was calculated and it is given in Fig 3. Humidity of air could be measured at heights up to 11 km using the band at 1.4 μ; for higher heights the stronger bands at 1.9 and 2.6 μ were used. Curves I, II and III in Fig 3 give the amount of water vapour as a function of height determined from measurements carried out in 1957, 1956 and 1955 respectively. The 1957 data for heights of 11-14 km (curve I) are not regarded as reliable.
Acknowledgments are made to G.I. Golyshev, V.G. Kastrov, A.S. Masenkis and I.V. Patalakhin for their help. There are 3 figures and 13 references, 8 of which are English, 3 Soviet and 2 German.

FURSEV, N.D., inzh.; ROSHCHIN, V.I., inzh.; KUZHELEV, V.I., inzh.

Means for the mechanization and automation of production at the plants of the Moscow City Economic Council. Mekh. i avtom. proizv.15 no.4:40-43 Ap '61. (MIRA 14:5)
(Moscow--Machine-tool industry--Technological innovations)
(Automation)

FURSEY, G.N.; TOLKACHEVA, I.D.

High densities of autoelectronic current and effects preceding vacuum breakdown in Ta and Mo emitters. Radiotekh. i elektron. 8 no.7: 1210-1221 Jl '63. (MIRA 16:8)

(Cathodes)

FURSEY, G.N.

Field emission from single crystals of tungsten preceding the development of an arc-through in vacuum. Radiotekh. i elektron. 6 no.2:298-302 F '61. (MIRA 14:2)

(Field emission) (Tungsten)

S/109/62/007/009/002/018
D409/D301

AUTHORS: Sokol'skaya, I.L., and Fursey, G.N.

TITLE: Study of effects, preceding the disintegration of tungsten emitters by field-emission current pulses of high density

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 9, 1962, 1474 - 1483

TEXT: The field emission of tungsten emitters, with current densities of the order of 10^8 a/cm^2, was studied by the pulse method (the pulse duration ranging from 1-4 microseconds). The experimental apparatus is shown schematically. A rectangular pulse of negative polarity was applied to the cathode of the apparatus. The corresponding current-pulse was drawn at the collector. Both pulses were recorded by means of the electron-beam oscillograph OK-17M (OK-17M). The oscillograph was simultaneously used for photographing the emission patterns. All the experiments were carried out in a vacuum (of the order of 10-9 mm Hg). The design of the apparatus permitted measuring the current from various parts of the emitter

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Study of effects, preceding ...

surface; It was found that all the processes which take place in the pre-arc (pre-breakdown) period, are reversible and reproducible (up to the critical current-density), and that the disintegration of the emitter takes place during a time interval which is much shorter than 1 microsecond. A figure shows typical oscillograms of the spontaneous current increase. Another figure shows the bright rings, surrounding the emission pattern. It is concluded that the dependence of the process on the duration of the field-emission current, the magnitude of the latter, and the considerable lag which characterizes all the effects, are proof of the thermal nature of the investigated phenomena. The reproducibility of the results stresses the strict regularity and reversibility of the processes. The emitter is very stable and remains so even under conditions close to critical current-densities, (provided that the voltage is stable). The pre-arc period is characterized by a considerable heating-up of the emitter; the temperature at the beginning of the saturation period is about 1500-2000°K. The current at the bright ring has lag which disappears with a higher initial temperature and current density. The temperature effect at the ring is much greater than at the center. The breakdown which occurs at the critical

Study of effects, preceding ...

current-density, takes place very suddenly and is of very short duration; the time in which the arc develops is immeasurably short as compared to the pulse duration. The critical current-densities can be somewhat increased by reducing the pulse duration. There are 12 figures.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova (Leningrad State University im. A.A. Zhdanov)

SUBMITTED: March 19, 1962

G.N. Fursey; (the voltage could be measured to an accuracy of 10 volt.) It was found that the relative current-rise decreases with increasing thickness of the coating. The appearance of a bright ring surrounding the emission pattern, served as an indication that the pre-arc state was reached. A figure shows the emission patterns for two different barium-coatings of the tungsten emitter. Other figures represent the process of migration and evaporation of a thin Ba-layer, deposited on the cold tungsten emitter. The current-voltage characteristics exhibit a strong deviation towards lower current-densities, and this all the more so, the lesser the work function. This can be ascribed to the influence of the space charge. The above result is in good agreement with that of I.P. Barbour et al. (see references). It is concluded that the relative current-rise decreases with the work function; this is due to the influence of the space charge and to the temperature effect of the thermo-autoelectronic emission. Emitters, activated by a Bamonolayer, are stable up to critical current-densities. The pre-arc period of an emitter, coated with various layers which reduce the work function, is characterized by the appearance of bright rings in the emission pattern. This is also the case with tungsten-carbide emitters, but

such emitters are less stable. A treated tungsten emitter is stable up to critical current-densities, whereas the character of the corresponding pre-arc effects is analogous to that of a smooth emitter. The temperature, corresponding to the evaporation and migration of Ba, on heating the emitter by a continuous current, is approximately 2000-2500°K. The appearance of fluctuations of the current-voltage characteristics was confirmed. There are 12 figures. The most important English-language reference reads as follows: I.P. Barbour, W.W. Dollan, J.K. Trolan, E.E. Martin, W.P. Dyke, Phys. Rev., 1953, 92, 1, 45.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova (Leningrad State University im. A.A. Zhdanov)

SUBMITTED: March 19, 1962

L 11271-63 EWT(1)/BDS--AFFTC/ASD

ACCESSION NR: AP3003722 S/0109/63/008/007/1210/1221

57
51

AUTHOR: Fursey, G. N.; Tolkacheva, I. D.

TITLE: Large densities of autoelectric current and effects preceding vacuum breakdown for Ta and Mo emitters

SOURCE: Radiotekhnika i elektronika, v. 8, no. 7, 1963, 1210-1221

TOPIC TAGS: field emission, large current density, space charge, vacuum arc, current density

ABSTRACT: A detailed investigation of autoelectric emission with emphasis on the process of spontaneous current variation in time and the appearance of rings on the emission image which precedes the vacuum arc has been carried out using pulse techniques on single-crystal Ta and Mo emitters at current densities of approximately 5 x 10^7 amp/cm^2. The point-shaped cathode was produced by etching for 2 to 3 min in a 50% HNO_3 and 20% HF solution. The degassing of Ta and Mo points was done by annealing for 1 to 3 hr at temperatures of 1500 to 1800K, followed by short-time heating at 2500K for Mo and 2800K for Ta. Measurements were made in sealed devices at residual gas pressures on the order of 10^{-9} mm Hg, and the results were compared to data obtained from analogous investigations on W single crystals. It was found

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L 11271-63

ACCESSION NR: AP3003722

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that: 1) the processes preceding the vacuum arc in the cases of Ta and Mo are similar to those occurring in the case of tungsten; 2) as compared to tungsten, a greater number of rings is detected in the case of Ta; 3) for Ta, critical current densities are somewhat lower than for W, reaching 5 x 10^6 to 5 x 10^7 amp/cm^2; 4) the occurrence of the phenomena preceding the vacuum arc is linked to a definite current density and emitter resistance to thermal decay; and 5) the space charge plays an essential role in the deviation of volt-ampere characteristics from linearity. "The authors thank I. L. Sokol'skaya, R. I. Garber, V. N. Shrednik, I. G. Kasayev, Kh. A. Noyman, and A. I. Klimin for their advice." Orig. art. has: 11 figures.

ASSOCIATION: none

SUBMITTED: 02Jul62 DATE ACQ: 02Aug63 ENCL: 00

SUB CODE: PH NO REF SOV: 011 OTHER: 009

rh/ds

Card 2/2

S/0057/64/034/007/1312/1316

ACCESSION NR: AP4042008

AUTHOR: Fursey, G.N.

TITLE: Pulsed field emission of rhenium

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.7, 1964, 1312-1316

TOPIC TAGS: field emission, vacuum arc, pulsed arc, rhenium

ABSTRACT: Field emission of rhenium points was observed. Particular attention was given to the phenomena accompanying the transition to a vacuum arc discharge. The investigation of rhenium was undertaken because it has a hexagonal structure, and the transition to the vacuum arc has been previously investigated only in materials having cubic structure. Suitable hemispherical points were successfully formed on 0.23 mm diameter 99.97% pure rhenium wires by the automatic electrolytic etching method (M.I.Yelinson, V.A.Gor'kov and G.F.Vasil'yev, Radiotekhnika i elektronik, 2, 2,204,1957) with an etchant consisting of 25% phosphoric acid, 25% glycerine and 50% alcohol. Field emission photographs are reproduced with the emitting faces identified. The formation of a ring about the field emission image, similar to that found with tungsten and tantalum (I.L.Sokol'skaya and G.N.Fursey, Ibid.6,2,298,1961),

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ACCESSION NR: AP4042008

was sometimes observed when the potential was sufficiently increased. When a ring was formed, the behavior of the current was very similar to its behavior in the case of tungsten and tantalum; such minor differences as were observed are ascribed to the greater work function of rhenium. It was possible, however, only "very rarely" to observe these phenomena in rhenium. The reason for this is not understood. The logarithm of the current was found to be a linear function of the potential at low and moderate currents. At large currents a periodic deviation from this linear relation was observed, the amplitude of which increased with increasing potential and current. This behavior is not understood. "In conclusion, the author extends his deep gratitude to I.L.Sokol'skaya for much valuable advice and for examining the manuscript. The author is very grateful also to B.P.Nikonov for kindly providing the samples of rhenium wire, to B.S.Krasikov for a consultation concerning the choice of etchant, and to students L.A.Fursey and G.P.Obnorskaya for assistance in the work." Orig.art.has: 5 figures.

ASSOCIATION: Leningradskiy gosudarstvenny*y universitet im.A.A.Zhdanova (Leningrad State University)

SUBMITTED: 06Sep63 ENCL: 00

SUB CODE: EM,EC NR REF SOV: 011 OTHER: 007

2/2

ACCESSION NR: AP4035705 S/0057/64/034/005/0911/0912

AUTHOR: Zubenko, Yu.V.; Sokol'skaya, I.L.; Fursey, G.N.

TITLE: Concerning some peculiarities of field emission at high current densities

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.5, 1964, 911-912, and illustration facing p.912.

TOPIC TAGS: electron field emission, thermal field emission, point cathode

ABSTRACT: The bright rings surround field emission photographs of tungsten single crystal points obtained by high current pulsed operation and ascribed by their discoverors to thermal field emission from the portion of the emitter just below the tip (I.K.Trolan, E.E.Martin and I.Barbour,Phys.Rev.91,1043,1953) have been recently observed with Ta, Re, and W_2C emitters by two of the present authors (I.L.Sokol'skaya and G.N.Fursey,Radiotekhnika i elektronika,7,1474,1484,1962), who advanced several different hypotheses to account for them. Now, however, the rings have been obtained on photographs made under steady operation at normal currents with tungsten emitters that have been coated with barium or thorium to reduce the work function, and it is no longer reasonable to doubt their thermal field emission origin. Identi-

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ACCESSION NR: AP4035705

cal rings were obtained with a pulsed emitter operated at high current density and with the same emitter coated, heated, and operated continuously at moderate current. The emission from the conical portion of the emitter below the spherical tip produces a ring because the approximately cylindrical field in this region magnifies in only one dimension, in contrast to the spherical field about the tip, which magnifies in two dimensions. The rings show both radial and azimuthal structure; this is ascribed to the alternation of regions of high and low work function, which naturally occurs on the conical portion of the emitter as well as on the tip. The rings are sometimes observed to overlie the outer portion of the field emission image of the spherical tip. This is ascribed to a crossing of the electron beams occasioned by the complex structure of the field in the transition region between the approximately spherical field about the tip and the approximately cylindrical field about the lower portion of the emitter. Five field emission photographs are reproduced, four of which show rings. Orig.art.has: 1 figure.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im.A.A.Zhdanova (Leningrad State University)

SUBMITTED: 11Jul63 DATE ACQ: 20May64 ENCL: 00

SUB CODE: EC,NP NR REF SOV: 001 OTHER: 001

Card 2/2

FURSEY, G.N.

Pulse field emission of rhenium. Zhur. tekh. fiz. 34 no.7:1312-1316 Jl '64 (MIRA 17:8)

1. Leningradskiy gosudarstvennyy universitet imeni A.A. Zhdanova.

L 41270-66 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c)

ACC NR: AP6018743 SOURCE CODE: UR/0057/66/036/006/1125/1131

AUTHOR: Fursey, G.N.; Shakirova, S.A.

ORG: Leningrad State University im. A.A.Zhdanov (Leningradskiy gosudarstvennyy universitet)

TITLE: On the possibilities of confining field emission within small solid angles

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 6, 1966, 1125-1131

TOPIC TAGS: field emission, tungsten, zirconium, adsorption

ABSTRACT: The authors have investigated field emission from tungsten points having adsorbed mono- or bimolecular layers of zirconium in order to assess the advantages of such tungsten-zirconium points as field emission cathodes for electron optical applications. Zirconium is known to be preferentially adsorbed on the cubic faces of tungsten and to reduce the work function considerably; it was accordingly anticipated that enhanced emission would be obtained from regions of reduced area, with consequent concentration of the field emission current into conical beams of small solid angle. The zirconium was deposited on the tungsten points from a molecular beam, and most of the measurements were performed in a vacuum of 10^{-8} to 10^{-9} mm Hg. The emitting area of a tungsten-zirconium point was found to be much smaller at moderate current than that of a tungsten point, and the limiting current that could be obtained without destroying the point was the same with the adsorbed zirconium as without it. Some 8 to

Card 1/2 UDC: 537.525.2

ACC NR: AP6018743

12 times the current could be obtained within an aperture of 0.01 radian from a tungsten-zirconium field emission cathode as compared with a tungsten cathode without adsorbed zirconium. The angular concentration of the field emission current due to the adsorbed zirconium was even greater at moderate total currents, but at high currents the contrast between the zirconium coated regions and the remainder of the tungsten point decreased. The decrease in the contrast at high currents is ascribed to the inhibiting effect on the field emission of the space charge due to the field emission current. The tungsten-zirconium points were very stable under high vacuum conditions, and when the emission decreased it could be restored by flashing to 1200-1300 °K for 30 sec. Increasing the pressure to 10^{-6} mm Hg considerably reduced the emission but left the contrast between the different parts of the point unchanged, or even increased it; the emission could be partly restored by heating to 1300-1400 °K. Increasing the pressure to 10^{-3} mm Hg destroyed the zirconium film. The authors thank Professor B.N.Ostroumov for calling their attention to the problem, V.N.Shrednik for consultation on the technical aspects involved in preparing adsorbed zirconium layers, and student T.T.Popsuyko of the Physics Department for assistance with the work. Orig. art. has: 5 figures.

SUB CODE: 20/ SUBM DATE: 06Jul65/ ORIG.REF: 011/ OTH REF: 006

Card 2/2 M.P

L 60420-65 ENT(1)/EWP(e)/ENT(m)/EWP(1)/EWG(m)/T/EWP(t)/EEC(b)-2/EWP(b) Pq-4/
Pl-4 IJP(c) RDW/JD/GG/GS/JAJ/WH
ACCESSION NR: AT5017276 UR/0000/65/000/000/0208/0212 41

AUTHOR: Bobrov, A.I.; Borisova, Z.U.; Fursey, L.A. B+1

TITLE: Electrical conductivity of readily crystallizable glasses of the composition AsSe sub x T1 sub y

SOURCE: Leningrad. Universitet. Khimiya tverdogo tela (Chemistry of solids). Leningrad, Izd-vo Leningr. univ., 1965, 208-212

TOPIC TAGS: glass conductivity, arsenic compound, selenium compound, thallium compound, glass crystallization

ABSTRACT: Five $AsSe_xTl_y$ compositions close to the crystallization limit were studied. From the electrical conductivity data, the energy of conductivity ϵ_σ and preexponential factor $\log \sigma_0^e$ were calculated graphically. Values of the modulus of conductivity

$$\frac{\sigma_0^e}{[v]}$$

and steric factor $\log \beta$ were also determined. The introduction of thallium into vitreous arsenic selenides increases their conductivity and decreases the energy of conductivity.

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L 60420-65
ACCESSION NR: AT5017276 O

Crystallization of the glass $AsSe_{2.5}Tl_{1.0}$ at 150 and 200C with annealing increases the density of the alloys, while the conductivity decreases by about one order of magnitude. The energy of conductivity increases from 1.14 to 1.36 eV. The steric factor log β does not change appreciably on crystallization, which starts at the surface and spreads throughout the volume. A complete crystallization of the glass $AsSe_{2.5}Tl_{1.0}$ was achieved, as indicated by the values of the conductivity and density, which were the same after annealing for 5 hr. at 150C and for 3 hr. at 200C, and did not change on further annealing. Orig. art. has: 2 figures and 4 tables.

ASSOCIATION: None

SUBMITTED: 02Mar65 ENCL: 00 SUB CODE: MT, EM

NO REF SOV: 008 OTHER: 001

Card 2/2 dop

ZEROVA, Mariya Yakovlevna; FURS-FESENKO, N.S., red.; LISOVETS', O.M.[Lysovets', O.M.], tekhn. red.

[Edible and poisonous mushrooms of the Ukraine] Istivni ta otruini hryby Ukrainy. Kyiv, Vyd-vo AN Ukr.RSR, 1963. 200 p. (MIRA 16:10)

(Ukraine--Mushrooms)

KOMISSARENKO, Vasiliy Pavlovich; FURS-FESENKO, N.S., red.; SPEKTROVA, T.R., tekhn. red.

[Splenin; its biological and therapeutic properties] Splenin; biologicheskie i lechebnye svoistva. Kiev, Izd-vo AN Ukr.SSR, 1963. 40 p. (MIRA 16:12)
(SPLENIN)

L 36955-66 EWT(m)/T/EWP(t)/ETI IJP(c) JW/JD/JG

ACC NR: AT6020041 (A) SOURCE CODE: UR/2564/65/005/000/0383/0390

AUTHOR: Voron'ko, Yu. K.; Osiko, V. V.; Fursikov, M. M.

ORG: none

TITLE: The study of the structure of CaF_2-Sm^{3+} crystals by optical means

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, v. 5, 1965, 383-390

TOPIC TAGS: crystal optic property, crystal absorption, crystal growing, calcium fluoride

ABSTRACT: The present paper reports on studies of absorption, luminescence, and excitation spectra of a large number of CaF_2-Sm^{3+} crystals grown under various conditions with the aim of establishing a fast method for the study of the structure of fluorite crystals. An analysis of the results shows that in CaF_2-Sm^{3+} crystals there are basically three types of optical centers the relative concentration of which depends on the conditions under which the crystals were produced. If no oxygen admixtures are present, the crystals contain a single type of centers (I) of tetragonal symmetry, as determined by P. P. Pashinin of the Oscillation Laboratory of the Physics Institute, AN SSSR, (Laboratoriya kolebaniy Fizicheskogo instituta AN SSSR) using electron paramagnetic resonance. These centers consist of Sm^{3+}-F^{1-} ion pairs located at one of the

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L 36955-66

ACC NR: AT6020041

nearer internodal points. Type II centers have a trigonal symmetry and seem to consist of Sm^{3+}-O^{2-} ion pairs. The structure of type III centers is not yet understood. Orig. art. has: 3 figures and 1 table.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 004/ OTH REF: 003

Card 2/2

Aminoalkyl derivatives of quinuclidine. M. V. Rubtsov, E. S. Nikitskaya, E. E. Mikhlina, A. D. Yanina, and V. Ya. Furshtatova (S. Ordzhonikidze All-Union Sci. Research Chem.-Pharm. Inst., Moscow). *Zhur. Obshchei Khim.* 23, 1535–40(1953); cf. Rubtsov, *et al.*, *C.A.* 47, 3975*d*; 48, 8782*a*.—Heating 1.5 g. 2-quinuclidinecarboxylic acid HCl salt with 16 ml. $SOCl_2$ 8 hrs. at 60–5°, evapg. the $SOCl_2$ with C_6H_6, adding the crude acyl chloride-HCl with cooling to 50 ml. 10% Me_2NH in Et_2O, and treating the product with 10 ml. 50% K_2CO_3 gave 67% *N,N-dimethyl-2-quinuclidinecarboxamide*, m. 48–50°, $b_{0.4}$ 97–100°. With Et_2NH is similarly formed 73% *corresponding N,N-di-Et amide*, $b_{0.8}$ 100–2°. Dry NH_3 with the HCl salt of the dichloride of 2-carboxy-3-quinuclidineacetic acid, obtained similarly, gave 66.8% of the *diamide*, m. 198–200° (from EtOH). Me_2NH gave similarly 79.7% of the *corresponding bis(dimethylamide)* (I), m. 117–18°; while Et_2NH gave 82.2% *bis(diethylamide)* (II), $b_{0.4}$ 163–8°, m. 45°. I can be distd. (b.s 165–7°). With $PhCH_2NH_2$ is formed 67.7% *bis(benzylamide)* (III), m. 130–41°. Refluxing 1.39 g. 2-quinuclidinecarboxanilide in 95 ml. Et_2O with 0.85 g. $LiAlH_4$ 20 hrs., adding 1.34 ml. H_2O, filtering, treating the solid with 50% K_2CO_3 extg. with CH_2Cl_2, and distg. the ext. gave 40% *2-(anilinomethyl)quinuclidine*, $b_{0.8}$ 82–5°; *dihydrochloride*, m. 277–9° (from EtOH). Similar reduction of *N,N-dimethyl-2-quinuclidinecarboxanilide* gave 82% *2-(dimethylaminomethyl)quinuclidine*, $b_{0.8}$ 82–3°; *dipicrate*, m. 211.5–13.5° (from EtOH). The corresponding diethylamide gave 81% *2-(diethylaminomethyl)quinuclidine*, b_{10} 131–2°; *dipicrate*, m. 196–8° (from 50% EtOH). Similarly gave 78.2% *2-(dimethylaminomethyl)-3-(2-dimethylaminoethyl)quinuclidine*, $b_{0.8}$ 98°; *tripicrate*, m. 196–7° (from Me_2CO); II gave 80.7% *2-(diethylaminomethyl)-3-(2-diethylaminoethyl)quinuclidine*, $b_{0.8}$ 125–7°; while III gave 72% *2-(benzylaminomethyl)-3-(2-benzylaminoethyl)quinuclidine*, $b_{0.8}$ 230–2°. The unsubstituted diamide failed to react. O. M. K.

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FURSHTATOVA, V. YA.

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M. A. YOUTZ
2 copies

Synthesis of diastereoisomeric 2-phenyl-3-(4'-piperidyl)-glutaric acids. M. V. Rubtsov, R. R. Mikhlina, and V. Ya. Furshtatova. J. Gen. Chem. U.S.S.R. 24, 2125 (1954) (Engl. translation).—See C.A. 49, 14758b. R. M. R.

RM

FURSHTATOVA, V. YA.

V Synthesis of diastereoisomeric 2-phenyl-3-(4-piperidyl)-glutaric acids. M. V. Rubtsov, Z. P. Mikhlina, and V. Ya. Furshtatova (S. Ordzhonikidze All-Union Sci. Research Chem. Pharm. Inst., Moscow). *Zhur. Obshchei Khim.* 24, 2060-62(1954); cf. *C.A.* 48, 5078a.—A mixt. of EtONa (from 2.0 g. Na and 40 ml. EtOH), 18.50 g. $PhCH_2CO_2Et$, and 20 g. Et 3-(4-pyridyl)acrylate heated 2 hrs. at 60°, and treated with very dil. AcOH gave 90% *di-Et 2-phenyl-3-(4-pyridyl)glutarate*, m. 100° (from petr. ether); hydrolysis with boiling 1:1 HCl 4 hrs. gave the *free acid*, decomp. 231–3°, insol. in org. solvents. Hydrogenation of the *di-Et ester* over a Pt oxide catalyst in EtOH contg. dry HCl required 110 hrs., yielding the corresponding *3-(4-piperidyl) analog* (I), m. 79–80°, as a *monohydrate*; distn. results in loss of H_2O, yielding the anhyd. *free ester*, $b_{0.1}$ 172°, which readily picks up 1 H_2O. The product heated with Ac_2O 1 hr. gave *di-Et 2-phenyl-3-(1-acetyl-4-piperidyl)glutarate*, $b_{0.1}$ 215–18°, m. 88°. Hydrolysis of I refluxed 16 hrs. in concd. HCl gave a less-sol. isomer of the *free acid HCl salt* (II), decomp. 230–1°, and a more-sol. *isomer* (III), decomp. 178° (from EtOH-Et_2O). The former isomer with alc. NH_3 gave a free acid decomp. 210–12°, while the latter gave a free acid isomer decomp. 372°. Heating II *in vacuo* 15 min. at 230° converts it to III, isolated as the HCl salt. The di-Et ester with Br in $CHCl_3$ at 20° gave *di-Et 2-phenyl-3-(4-piperidyl)-glutarate perbromide HBr salt*, $C_{19}H_{29}O_4NBr_4$, decomp. 145–7°.

G. M. Kosolapoff

Furshtatova V. Ya.

(2)

62 Synthesis of substituted derivatives of 2-aminomethyl-3-(2-hydroxyethyl)quinuclidine. M. V. Rubtsov, E. E. Mikhlina, and V. Ya. Furshtatova (S. Ordzhonikidze All-Union Sci. Research Chem.-Pharm. Inst., Moscow). *Zhur. Obshchei Khim.* 24, 2317–22(1954); cf. *C.A.* 48, 3978a, 12114e.—Hydrolysis of 13.4 g. di-Et 2-carboxy-3-quinuclidylacetate in H_2O 7 days at room temp. gave 11.35 g. crude *3-carbethoxymethylquinuclidine-2-carboxylic acid* (I) (from abs. EtOH-Et_2O) contg. some *2-carboxy-3-quinuclidine-acetic acid*, sepd. through its insoly. in $CHCl_3$, m. 180–2°. The $CHCl_3$ ext. from the above treated with EtOH-HCl gave 85.8% *3-carbethoxymethylquinuclidine-2-carboxylic acid-HCl*, m. 228–9° (decompn.). This (4.7 g.) heated with 47 ml. $SOCl_2$ 4 hrs. at 60–5°, concd. *in vacuo* and treated with dry NH_3 in Et_2O suspension gave 80.6% *3-carbethoxymethyl-quinuclidine-2-carboxamide* (II), m. 102–3° (from Et_2O); similarly was prepd. the *β-diethylaminoethylamide*, viscous liquid, $b_{0.4}$ 185–6°, and the *diethylaminoisopentylamide*, 76.1%, $b_{0.3}$ 190–1° (structure not given), as well as the *2-pyridylamide*, 70.2%, $b_{0.5}$ 210–12°, m. 56–8°, and 50.8% corresponding *piperidide*, $b_{0.4}$ 160–3°, m. 45–7°. II (3.05 g.) reduced with 2.4 g. $LiAlH_4$ in Et_2O-C_6H_6 gave 78.7% *2-aminomethyl-3-(2-hydroxyethyl)quinuclidine* (III), $b_{0.3}$ 157–60°; *dipicrate*, m. 203–4°. Similar reduction of the other amides gave: 65% *2-(β-diethylaminoethylaminomethyl)-3-(2-hydroxyethyl)quinuclidine*, $b_{0.5}$ 17[illegible]°; 86.5% *2-(diethylaminoisopentylaminomethyl)-3-(2-hydroxyethyl)quinuclidine*, $b_{0.4}$ 185–6°, and 69.5% *2-(2-pyridylaminomethyl)-3-(2-hydroxyethyl)quinuclidine*, m. 137–9° (from $CHCl_3$), as well as 67.6% *N-[3-(2-hydroxyethyl)quinuclidylaminomethyl]piperidine*, m. 116–17°. III (1.25 g.) and 1.31 g. 6-methoxy-4-chloroquinoline heated in PhOH 3 hrs. at 190° gave 46.6% *2-(6-methoxy-4-quinolyl)aminomethyl-3-(2-hydroxyethyl)quinuclidine*, m. 207–8° (from Et_2O-$CHCl_3$). Similar reaction with 2-methoxy-6-chloro-9-phenoxyacridine in BuOH gave 78.3% *2-[2-methoxy-9-phenoxy-6-acridylaminomethyl]-3-(2-hydroxyethyl)quinuclidine*, m. 165–6.5°; *di-HCl salt*, decomp. 258–60°.

G. M. Kosolapoff

FURSHTATOVA, V. YA.

β-(4-Pyridyl)glutaric acid and products of its transformations. M. V. Rubtsov, E. E. Mikhlina, and V. Ya. Furshtatova (S. Ordzhonikidze All-Union Sci. Research Chem.-Pharm. Inst., Moscow). *Zhur. Obshchei Khim.* 2[?], 44[?] (1954); cf. *C.A.* 48, 13744h.—Heating 5 g. di-Et β-(4-pyridyl)glutarate with 23 ml. *N* KOH 5 hrs. gave on acidification and evapn. 99% *β-(4-pyridyl)glutaric acid* (I), m. 183-5° (from EtOH). I *di-Et ester* with N_2H_4 in EtOH gave 91.5% I *dihydrazide*, m. 159-60°. I di-Et ester and concd. NH_4OH-EtOH in 25 hrs. gave 84.5% I *diamide*, m. 192-4° (from EtOH). I *di-Et ester* (5 g.) refluxed 29 hrs. with 10.2 g. $PhCH_2NH_2$ gave 93.3% I *bis(benzylamide)*, m. 152-3°; the use of $Et_2NCH_2CH_2NH_2$ similarly gave 87% I *bis(diethylaminoethylamide)* (II), m. 100-2°. Similarly was prepd. I *bis(3-diethylaminopropylamide)*, a hygroscopic solid, $b_{0.2}$ 220-50°. II (3 g.) added to 1.04 g. $LiAlH_4$ in Et_2O-C_6H_6 and refluxed 20 hrs., gave after aq. treatment, 68% *1,5-bis(diethylaminoethylamino)-3-(4-pyridyl)pentane*, $b_{0.1}$ 193-7°, n_D^{20} 1.5017, whose *picrate*, yellow, m. 103-5°. Refluxing I di-Et ester with $Et_2NCH_2CH_2OH$, in which a little Na had been dissolved, with continuous distn. of EtOH 3 hrs. at 150° gave 61.3% I *bis(diethylaminoethyl)ester*, $b_{0.1}$ 195-7°. Reduction of I di-Et ester with $LiAlH_4$ in C_6H_6 (2 hrs. at reflux) gave 86% *3-(4-pyridyl)-1,5-dihydroxypentane*, m. 64-6°. This (1.9 g.) acidified with alc. HCl, freed of EtOH by distn. *in vacuo*, soln. in dry $CHCl_3$, and treatment with 12 ml. $SOCl_2$ gave after refluxing 1 hr. 42.7% *3-(4-pyridyl)-1,5-dichloropentane* (III), $b_{0.1}$ 121-2°, after treatment with concd. K_2CO_3. On standing this forms the quaternary salt, insol. in Et_2O. III (0.85 g.) refluxed with excess $PhCH_2NH_2$ 7 hrs. gave *N-benzyl-4-(4-pyridyl)piperidine*, $b_{0.1}$ 160-4° (*picrate*,

Rubtsov, M.V., Mikhlina, E.E., and Furshtatova, V.Ye.

m. 215-16°). Hydrogenation of I di-Et ester over Pt in [illegible] HCl gave 90% *di-Et [illegible]*, b. [illegible] n_D^{20} 1.4685, which with hot N NaOH [illegible] gave the [illegible] *acid*, 63.8%, m. 213°, purified through the [illegible] which is insol. in H_2O; *HCl salt*, m. 174-5 [illegible]. The [illegible] conventionally treated gave: *diamide*, 51%, m. 18[illegible] (from EtOH-Et_2O); *bis(benzylamide)*, 69%, m. [illegible] from the acid HCl salt and $SOCl_2$, the [illegible] then treated with RNH_2); *[illegible]*, 67%, $b_{0.4}$ 170-80°. The bis(benzylamide) [illegible] LiAlH$_4$ in Et_2O-dioxane to 38% *1,5-dibenzylamino-3-[illegible]pentane*, $b_{0.4}$ 255-70°. G. M. K[illegible]

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910019-2"

FURSHTATOVA, V. Ya.

β-(4-Pyridyl)glutaric acid and products of its transformations. M. V. Rubtsov, E. E. Mikhlina, and V. Ya. Furshtatova. J. Gen. Chem. U.S.S.R. 26, 469 [illegible] (Engl. translation). See C.A. 50, 13946 — B. M. R.

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FURSHTATOVA, V. Ya.

USSR/ Organic Chemistry - Synthetic organic chemistry E-2

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11738

Author : Rubtsov M.V., Mikhlina Ye.Ye., Furshtatova V.Ya
Title : Preparation of Isonicotinic Acid

Orig Pub : Zh. prokl. khimii, 1956, 29, No 6, 946-948

Abstract : A method has been developed for the preparation of isonicotinic acid (I) by oxidation with dilute HNO_3 of the mixture of α-methylolpicolines (II) formed on heating mixture of β- and γ-picolines (III, IV) with formalin (V) at atmospheric pressure. It is shown that in lieu of HNO_3 a mixture of HNO_3 and H_2SO_4 can be successfully utilized in the oxidation. An experimental study is made of the preparation of I from citric acid (VI); a more precise determination has been made of the conditions of preparation, with increased yields, of 2,6-dihydroxy isonicotinic acid (VII) and 2,6-dichlor isonicotinic acid (VIII); yields of I have been considerably increased. 117.6 g technical mixture III and IV (the mixture contains 15% water and 40% IV, on the dry basis) and 200 g V are boiled 15 hours; III and excess V are steam distilled, aqueous solution of II is concentrated to 160-180 ml and

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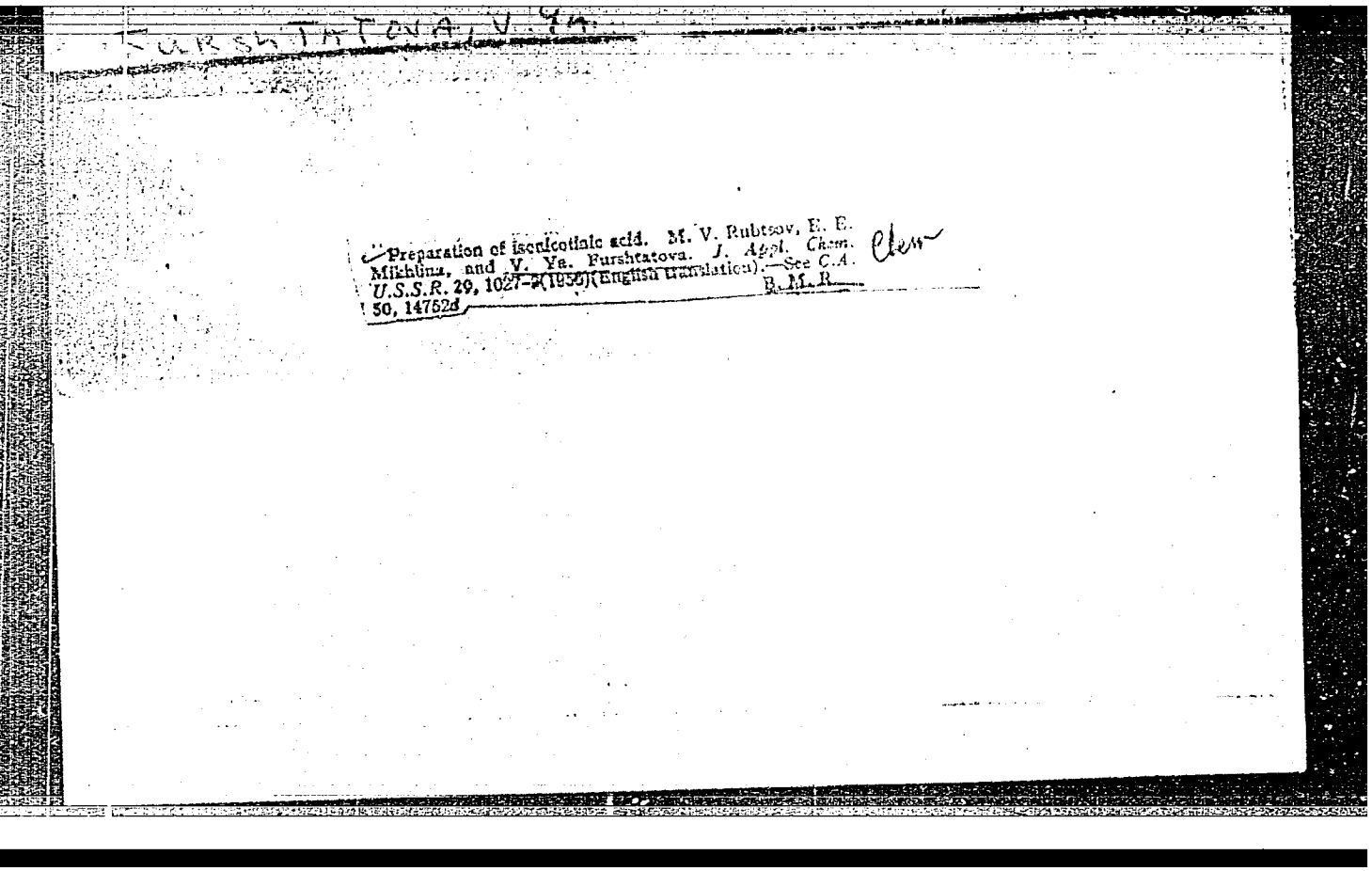
Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11738

these are added, within 20 minutes, to 350 ml of 57.5% HNO_3 heated to 98°, heating is continued for 4 hours, after which neutralization is effected with 65-75 g Na_2CO_3 to obtain I, yield 77.5-85% (on basis of IV), MP 314°. From distillate, by addition of 32 g KOH and 48 g NaCl, are isolated 48-56 g III. Trimethyl ester of VI, 73 g, is shaken for 15-20 minutes with 730 ml 25% aqueous solution of NH_3, the mixture is evaporated in vacuum, 365 g of 73% H_2SO_4 are added, the mixture is slowly heated to 125°, and held at 125-130°.



FURSHTATOVA, V. Ye.

Preparation of isonicotinic acid. M. V. Rubtsov, E. E. Mikhlina, and V. Ye. Furshtatova. *J. Appl. Chem. U.S.S.R.* 29, 1027–8(1956)(English translation).—See *C.A.* 50, 14752d.

Chem
B. M. R.

AUTHORS: ~~Furshtatova, V. Ya.,~~ Mikhlina, Ye. Ye., 79-28-3-23/61
Rubtsov, M. V.

TITLE: The Synthesis of the 6-Carboxymethyl-1-Diazocyclo-(3,2,1)-octane-7-Carboxylic Acid and Some of its Derivatives (Sintez 6-karboksimetil-1-azabitsiklo-(3,2,1)-oktan-7-karbonovoy kisloty i nekotorykh yeye proizvodnykh)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 3, pp. 668-675 (USSR)

ABSTRACT: A number of works is dealing with the synthesis and the biological investigation of the derivatives of quinuclidine, the 1 - diazocyclo - (2,2,2) - octane (refs.1-3). The dicyclic system isomeric to quinuclidine, the 1-diazocyclo-(3,2,1)octane, has however, not been sufficiently investigated until now. Only a limited amount of 6 - monosubstituted 1 - diazocyclo-(3,2,1) -octanes were obtained. The substituted octanes of the mentioned structure were not synthetized. Among the 2,3-disubstituted compounds of quinuclidine synthetized by the authors a number of biologically active products was found so that it was also

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The Synthesis of the 6-Carboxymethyl-1-Diazocyclo-octane-7-Carbocylic Acid and Some of its Derivatives 79-28 3-23/61

of interest to obtain the isomeric 6,7-disubstituted 1-Diazo-cyclo-(3,2,1) octanes and to compare the biological and chemical properties of the compounds of two isomeric series with each other, In the present work the synthesis of 6-carboxymethyl - 1 -diazocyclo-(3,2,1)-octane-7-carboxyclic and some derivatives is described. It was carried out according to the mentioned scheme (see formulae (I) to (X)). Thus the synthesis of 6-carboxymethyl-1-diazocyclo - (3,2,1) octane-7-carboxylic acid is described. The reaction process is shown as follows: From the ethylester of β-(pyridyl-3)-acrylic acid passing through the ethylesters of β-dicarboxy-methyl-β-(piperidyl - 3)- proprionic acid, β-carbethoxybromo-ethyl-(piperidyl -3)-proprionic acid to the diethylester of 6-carboxymethyl-1-diazo-(3,2,1)-octane- 7,7 -dicarboxylic acid. Together with these mentioned products the following compounds are synthetized: 1.- The diethylester of 6-carboxymethyl--1-diazocycle-(3,2,1)-octane-7-carboxylic acid.
2.- The di(diethylaminoethyl)- and di-(dimethylaminoethyl) ester of the 6-carboxymethyl-diazocyclo-(3,2,1)-octane-
Card 2/3 7-carboxylic acid. 3. 6-(β-oxymethyl)-7-Oxymethyl)-diocyclo-

The Synthesis of the 6-Carboxymethyl-1-Diazocyclo-octane-7-Carbocyclic Acid and Some of its Derivatives 79-28-3-23/61

(3,2,1)-octane and 6 (β-chloroethyl)-7-chloromethyl-1-diazocyclo-(3,2,1)-octane.
There are 4 references, 2 of which are Soviet.

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AUTHORS: Furshtatova, V. Ya., Mikhlina, Ye. Ye., 79-28-5-8/69
Rabtsov, M. V.

TITLE: Synthesis of 6,7-Di-substituted 1-Azabicyclo-(3,2,1)-Octane (Sintez 6,7-dizameshchennykh 1-azabitsiklo-(3,2,1)-oktana)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5, pp. 1170-1176 (USSR)

ABSTRACT: In the last publication by the authors (Reference 1) a simple synthesis of 6-carboxymethyl-1-azabicyclo-(3,2,1)-octane-7-carboxylic acid and of its derivatives was described. Most interesting of these compounds were the properties of the ethyl esters of 6-carbethoxymethyl-1-azabicyclo-(3,2,1)-octane-7-carboxylic acid. Thus this ester hydrolized easily in aqueous solution under formation of an acidous ester. The same way also reacts the isomeric ethyl ester of 3-carbethoxymethylquinuclidine-2-carboxylic acid which converts to 3-carbethoxymethylquinuclidine on the same conditions. The comparison of the two isomeric diesters makes possible the assumption, that the saponification of

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of the carbethoxyl group in ethyl ester of the 6-carbethoxymethyl-1-azabycyclo-(3,2,1)-octane-7-carboxylic acid (in the mentioned scheme) takes place in position 7 and that the acidous ester forming on this occasion has the structure (II) of the scheme. From this a whole number of 7-alkyl-(aryl)-aminoethyl-6-(β-oxyathyl)-1-azabicyclo--octanes and of esters of 7-dialkylaminoethyl-6-(β-oxyethyl)-1-azabicyclo-(3,2,1)-octane were obtained. The compound (II) converts to compound (III) by means of thionylchloride; this compound was further treated with alkyl-(aryl)-amines. The amides (IV) obtained then were reduced to the compound (V) by means of lithium aluminum hydrate. On treating this with chlorine anhydrides of some acids the corresponding esters (VI) resulted. On the conversion of (V zh = ЖС) with thionylchloride the compound (VII) was obtained in which the chlorine atom in the 6-β-chlorethyl group is of limited activity as experiments showed.

Card 2/3 There are 2 Soviet references.